DESTRUCTIVE LESION OF THE LEFT CEREBRAL HEMISPHERE, WITH GENERAL PACHYMENINGITIS, AND A LARGE HEMORRHAGIC CYST PRESSING UPON THE RIGHT HEMISPHERE, OF THIRTEEN YEARS' STANDING.*

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THE following case of cerebral lesion is worthy of being recorded, not only for the extent of the lesions themselves, but also for the long period of time through which they existed. It illustrates the ability of the brain to bear a considerable amount of injury without causing a serious disturbance of the general health, or even of the mental faculties of the patient. As regards the history of the case, I regret to have failed in obtaining an official or otherwise more reliable account of the accompanying circumstances of the injury when first inflicted upon the patient than that furnished by the latter himself, as such a knowledge would have much facilitated the explanation of a certain phenomenon revealed by the autopsy. But as the patient was an inmate of the Charity Hospital for nearly fourteen years, he frequently told his story to the nurses and patients of the institution, and, from what I have learned, also without variation, which renders his account quite credible. The story runs as follows:

In the years 1865 and 1866, Edward Farley, of Irish nationality, worked at Memphis, Tenn., and was in the possession of some money, which he had lent to one of his friends. When asking one evening for the return of this money, his friend, who was performing the function of a watchman, answered the demand with a blow of his club upon Farley's head, felling him senseless to the ground. When recovering his consciousness, the latter found himself at the Memphis City Hospital, to which he had been taken, and where he had lived in an unconscious state for a number of weeks. He then found himself paralyzed on both sides, though at the time of leaving this hospital, to start for New Orleans, the left extremities had recovered their functions. Thus, when entering the Charity Hospital of this city, in 1877, he was only affected with right hemiplegia, which, however, did not prevent him from making his way to this institution a-foot. It is to be regretted that the physician of the particular ward to which he was assigned when entering the hospital is now dead for several years, as otherwise more accurate data concerning the patient's condition at that time might have been obtained. Through one of the older Sisters of Charity, who was then supervising this ward, however, I learned that the hemiplegia interfered but little with his movements, and that he had rather come to the hospital on account of his eyes, though in later years his sight appears to have been unaffected. In the course of some time, as it frequently happens with incurable cases, all special treatment was abandoned, and he became a permanent inmate of the institution, enjoying the privilege of roaming at his leisure about the place. As such I have met him about the hospital for a number of years until a few months before his death.

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* The plates illustrating this article will be furnished with the next volume and mailed to subscribers.

According to the statements of three old nurses, who knew him since 1869, and to what I observed myself, Farley was paralyzed in both extremities of the right side, with contracture of the flexors of the forearm, wrist, and fingers. In walking he dragged the paralyzed lower extremity along, and as the large toe, in consequence of the paralysis of the flexors of the foot, frequently struck the ground, he sometimes stumbled and fell. His general health, including his appetite, was always good. He had no convulsions, no pains in the head, nor anywhere else. His mind was clear, and he was able to express his ideas at all times without difficulty, and intelligently refer back to things that had happened many years before. His disposition was very irritable, and a fit of anger appeared to render him somewhat stupid for a day. As I learned from one of the Sisters of Charity, he was very pious, and a regular visitor of the little chapel in the hospital, where, only during the last years of his life, he had some trouble in kneeling. A few months before his death he became more dull and peevish; he would roam about in a listless manner, and frequently be unable to find his way back to his ward; he would leave things behind him without being able to render an account of them, nor knowing where he had last been. During this time also he became unable to express his wishes or wants; he would apply to the nurse of the ward for one thing or the other, but, unable to tell what he wanted, he would come to a "halt," and mutter some incomprehensible words to himself; if, however, somebody would mention the thing he wanted, he would say "yes" in a startled manner; his sight also commenced to fail. About three weeks before his death his mind became completely clouded; he was unconscious of what he did, and on some occasions fell into a quiet swoon without convulsive movements. In such a condition he died.

Before dismissing the clinical history of this case, it remains to be mentioned that there was a deep depression of an oval shape, and soft to the touch, upon the left side of

Farley's head, corresponding to the place upon which the blow of the club had been applied. It was by this depression that the patient was known to most of the inmates of the hospital; though he himself always asserted that, to the extent of his knowledge, *there had never been an open sore or wound upon this place.*

The autopsy made in this case was limited to the examination of the head and brain. In the left parietal region of the former, the above-mentioned depression was noticed. There was no defect or cicatrix of the scalp observed over this area; the skin appeared healthy and was covered with hair as abundantly as upon the rest of the head; nor was there any difficulty in dissecting the scalp from the surface of the depression, it being attached to the subjacent structure by a soft connective tissue. When the cranium was exposed by the removal of the scalp, the depression was found to be due to a deficiency, or large hole, in the bony vault, filled and closed by a membrane of a dense structure, presenting a white, almost glistening, appearance. The orifice formed by the absence of bony tissue was perfectly oval in form, measuring 9½ cm. in a horizontal, and 5 cm. in a vertical direction; the space between the superior border of the orifice and the median line of the vertex being about 3 cm. During the operation of removing the calvarium, it was found that the membrane filling up the orifice in the bone closely adhered to the dura mater, and, to accomplish the object in view, it became necessary to dissect the membrane from the bony margin without detaching it from the dura mater, after which proceeding the calvarium was removed without difficulty. In removing the dura mater, by cutting it at a level with the cranial bones left, another phenomenon was met with on the inner surface of the right half of this membrane, consisting in a large, so-called hemorrhagic cyst with comparatively thick walls, indicating that it had existed for a long time. The upper border of this cyst ran parallel with the longitudinal fissure at a distance of 18 mm. The cyst itself measured in a downward direction 6½ cm., while horizontally its length amounted to 10 cm.; it was ovoid in shape, and its thickness or transverse diameter amounted to 2 cm. As the result of the pressure of this cyst upon the underlying right cerebral hemisphere, the latter, instead of its normal convexity, presented a slightly concave surface, corresponding to the size and form of the cyst. As will be seen from the above description, the orifice in the bony vault on the left, and the cyst on the right side, were situated very nearly opposite to each other. The condition of the dura mater, and the structure of the cyst and the membrane, filling up the orifice in the bone, will be discussed further on.

The condition of the pia mater was that of chronic hyperæmia, the minute and larger vessels filled with blood; there was opacity of the arachnoid membrane almost over the whole convexity of the cerebrum; in some places even it was thickened.

In the left hemisphere of the cerebrum a large cavity was found, extending through the posterior third of the middle frontal convolution, directly in front of the sulcus præcentralis, through the two inferior thirds of the anterior and posterior central convolutions, the entire supramarginal and the anterior portion of the angular convolution, and, furthermore, through the superior third of the superior temporal convolution. The orifice of this cavity, that is, the area in which the cortex cerebri was entirely destroyed, embraced the root of the middle frontal, the middle of the anterior and posterior central, and the greater part of the supramarginal convolutions. The destruction was entirely confined to the white substance of the cerebrum, leaving the gray substance of the cortex in the form of a shell with a perfectly smooth inner surface, and passing around the larger and smaller sulci in the depth of the hemisphere. The thickness of the wall left between this cavity and the upper part of the left lateral ventricle amounted to about 1 mm. The pia mater extending over the orifice of the cavity was not attached to the dura mater, but had fallen into the cavity, occupying about one third of the latter, and forming, so to say, a separate compartment of it.

Let us now consider the different lesions individually, commencing with the calvarium. The orifice in this bony vault was situated in the parietal and frontal bones, while its lower border slightly encroached upon the squamous portion of the temporal bone, its upper border being 37 mm. distant from the sagittal suture. The margin of this pathological fenestra in the bone was thinned, or bevêlled, upon the outer surface, quite smooth, and presented the appearance of the outer table bent down by the disappearance of the diploë, while at the inside the border was even with the inner surface of the calvarium. In some places here the surface of the inner table appeared eroded, or roughened by the absorption of bony tissue. Directly in front of the coronal suture a small protuberance, or thickening of the bony margin, was observed. In the rest both the parietal and frontal bones appeared in a healthy condition.

The dura mater throughout, but particularly over and to some distance beyond the seat of the lesion, presented the appearance of inflammation, with all the characters of chronic pachymeningitis. Its inner surface was covered with a pseudo-membrane, upon the surface of which numerous minute red spots, resembling small extravasations of blood, were exhibited. On the right side the pseudo-membrane had developed into the cyst already mentioned. On the left side the dura mater was attached to, or rather continued into, the fibrous membrane, which, filling up the artificial foramen in the parietal and frontal bones, was closely attached to the bony margin and loosely to the scalp (fig. 1). A thin microscopical section of this part of the dura mater showed that the fibrous structure filling up the orifice differed in no respect from the former, adjacent to the arachnoid, but consisted of the same coarse bundles of connective tissue; nor were there any pathological changes observed in the newly formed portion. The fibrous structure, found in the place of the absent bony tissue, therefore, cannot be considered but a part, or thickening, of the dura mater. The inner or arachnoidal surface of the latter, on this side, was covered, as already mentioned, by the well-known pseudo-membrane.

Before proceeding to the description of the cyst, a few remarks regarding the particular pathological process concerned in the disappearance of the bony structure may be appropriate. My first idea as to the loss of bone in the cranial vault was that the bones might have been fractured by the weight of the blow into small fragments, and been subsequently removed by necrosis through an open wound,—a view which I, however, found incorrect when learning the patient's repeated assertions that there never had been a loss of continuity in the skin of this locality, and when, furthermore, no traces of a loss of tissue were detected at the autopsy. If the patient's statements were founded upon truth, then the disappearance of the bony tissue could only be explained by referring it to the effects of the blow having caused a disturbance in the nutrition of the bone, leading eventually to atrophy of the osseous tissue. There have been and perhaps always are a limited number of cases observed in which small portions of the cranial bones are found atrophied; but in these instances the absorption of the bone is caused by the pressure of tumors against the inner table, or by deficient nutrition concomitant to old age or depending upon diseased arteries. In the case under discussion, also, the blood-vessels of that portion of bone injured by the blow may have been diseased and induced a process of atrophy, though it will still remain an open question as to whether the fibrous membrane filling up the orifice left represented the bone itself, *minus* the earthy constituents, or whether it arose from the inflamed dura mater to simply replace the atrophied bony tissue.

A vertical transverse section of the cyst on the right half of the dura mater (fig. 1) showed that this tumor was ellipsoidal in form, and contained two cavities greatly differing in size and separated by a thick partition formed by the inner strata of the cyst. While the vertical diameter of the upper cavity, or compartment, only measured from 11 to 12 mm., that of the lower amounted to 42 mm. The walls of this cyst were entirely formed by the successive layers of the pseudo-membrane, the dura mater itself forming no integral part of them. Their thickness measured in the average about 1 mm., which, in the upper half of the cyst, increased to nearly 2 mm. Thin, microscopical, transverse sections of the walls of the upper part of the cyst, including the partition or septum, showed that they consisted of numerous strata, or membranes, measuring in thickness from $\frac{8}{1000}$ to $\frac{10}{1000}$ mm., and which, microscopically, could be separated from each other with a little care. In the same manner a separation could be effected—rather more easily—of the layers composing the thinner portion of the pseudo-membrane covering the inner surface of the dura mater beyond the cyst, both on the right and left side.

Stretched throughout the cavities of the cyst, a net or framework similar in form to the stroma of a sarcoma or cancer, and consisting of coagulated fibrin, was met with; the larger or smaller areolar spaces into which the cavities were divided by this network, and which communicated with each other, were filled up by a yellow, slightly reddish, gelatinous fluid. A microscopical examination of the anastomosing branches of this framework showed the characteristic structure of coagulated fibrin, viz., the minute network of fine granular fibrillæ.

Reserving some additional remarks upon the fibrinous framework extending throughout the cavities of the cyst for hereafter, I now pass to the description of the minute structure of the pseudo-membrane.

As may be supposed, and as has been known for some time, the mode of formation and development, as well as the structure of this membrane, whether forming the walls of a cyst, or whether simply covering the inner surface of the inflamed dura mater, presents everywhere the same peculiarities and characters. According to the prevailing theory, established by Virchow, the pseudo-membrane originally represents an efflorescence, or exudate, of the inflamed dura mater. The newly formed blood-vessels, extending through and forming a considerable portion of the neomembrane, are regarded as derived from the adjacent dura mater, while the delicate connective tissue forming its substratum is supposed to originate from emigrated colorless blood corpuscles. Let us examine how far this theory corresponds with the results of my own examinations in reviewing the structure of a thin portion of the pseudo-membrane detached from the dura mater beyond the cyst. In doing so it will be observed that this membrane is very loosely attached to the dura mater, a circumstance which has been explained by the mutual connection between these membranes being solely affected through the minute blood-vessels passing from the latter to the former, as seen with the aid of a loupe, or even by the naked eye. This, however, is not altogether the case, for in examining thin sections, including the dura mater and pseudo-membrane, it will be found that the first stratum of the latter is generally closely attached to the former, and the separation actually takes place between this stratum and the next one. In these sections it will furthermore be observed that the individual strata or layers composing the membrane are not placed exactly parallel to each other throughout the whole membrane, but in many places run into each other by means of the network of blood-vessels, of which they are chiefly composed. And it is these blood-vessels, surrounded by bundles of delicate connective tissue, which are seen passing from the first to the second stratum when the membrane is carefully pulled off from the dura mater.

If one of the thin layers of which the membrane consists is separated from the rest, properly prepared, and examined under the microscope, it will be found that it is almost entirely composed of small blood-vessels, with a diameter ranging from $\frac{5}{1000}$ to $\frac{20}{1000}$ mm., and presenting themselves in very different conditions. Those among them approaching most closely the normal type show a single wall, distinguished by a distinct double contour, and lodge, the same as normal capillaries, a number of oval nuclei. These vessels, like all others forming the membrane, divide at short distances dicho- or tricho-tomously, and, closely anastomosing with each other, form an intricate vascular network; they contain blood corpuscles in larger or smaller numbers. There are, however, a considerable number of other vessels exhibiting the same characters as just described, but presenting a second layer or coat formed around their original wall by a rather extraordinary process (figs. 2 and 3). Along the walls of these vessels, and surrounding them, namely, numerous larger or smaller masses of so-called hæmatin globules are observed. In the angles formed by the divisions of the vessels, particularly, entire accumulations of these masses are met with. The masses themselves consist of a number of larger or smaller globules—the larger ones of the size of colored blood corpuscles,—and present the yellow color and lustrous appearance of crystalline hæmatin, or hæmatoidin; they are enclosed in a finely granular protoplasm, exhibiting a distinct border, and containing one or two nuclei, the whole mass thus bearing the general character of an organic cell. The largest of these bodies present, when round, a diameter of about $\frac{25}{1000}$ mm. A number of these masses, or hæmatin containing cells, especially when placed in the angles of the dividing vessels, appear round, while those placed alongside of the vessels present a more or less elongated form. From the protoplasm of the latter processes are observed to arise, which, blending with others proceeding from the protoplasm of neighboring masses, finally form a protoplasmatic layer around the vessel, which, itself, is eventually transformed into a delicate neoplastic connective tissue. The general tendency of these masses of protoplasm and hæmatin globules, therefore, is toward organization.

A larger or smaller number of colored blood corpuscles are observed in the interior of the blood-vessels, though many of the latter, especially those of small diameter, are found empty. These blood-corpuscles, however, do not appear with smooth surfaces, as ordinary normal colored corpuscles present, but, like nuclei, show a distinct double contour, and contain from four to six distinct granules. It might be supposed that this appearance was due to these corpuscles having assumed the mulberry-form; but from my close and careful examinations I feel satisfied that this is not the case, though I am unable to explain the phenomenon. A number of years ago, I had met with nuclei resembling colored blood corpuscles in the newly formed minute blood-vessels of the chorion of a very small human embryo, from which observation I am inclined to regard the above blood corpuscles, also, as newly formed.

From the observation made on the blood-vessels above described, the whole process concerned in the formation of the new layer around their original walls may be presumed to commence with an escape of blood corpuscles, either by capillary hemorrhage, or even by diapedesis, from the interior of the delicate vessels. The same may be said of numerous other colored blood corpuscles not collected in masses, but irregularly lying in the meshes of the vascular network; though it appears to me that these may rather have escaped from the vessels by capillary hemorrhage. At any rate, the morphological elements of the blood, the colorless, as well as the colored corpuscles, escape from the vessels by one or the other mode, and give rise to the formation of those well-known cells containing a larger or smaller number of colored blood corpuscles. For a number of years now these cells have been frequently observed in hemorrhagic effusions, and their formation was at one time attributed to the gluing together of a number of colored corpuscles by coagulated fibrin; but in more recent times, since it was discovered that the protoplasm of the colorless blood corpuscles has a tendency to embrace foreign bodies, such as the granules of insoluble coloring matter, etc., it became obvious that these compound cells, in reality, represented colorless blood cells which had swallowed their colored brethren. I have become convinced of this fact on different occasions, but particularly about thirteen months ago, when examining some serous fluid drawn by tapping from a cyst situated in the recto-uterine pouch, very probably ovarian in nature. This fluid contained a limited amount of blood, with an apparent excess of colorless blood corpuscles; they mostly represented the larger kind, and many of them had assumed still greater dimensions by their protoplasm having embraced a number, in some instances as many as a dozen of colored blood corpuscles. In this instance there remained no doubt that these cellular forms represented, in reality, colorless blood corpuscles, the nuclei of which could be distinctly observed between the colored corpuscles enclosed by the protoplasm ; the minute granules of the latter also were still in motion.

As soon as the blood, therefore, has escaped from the vessels of the pseudo-membrane, the colorless blood corpuscles seize upon as many of the colored ones as their protoplasm is able to hold, and, with their prey enclosed, arrange themselves around the walls of the blood-vessels for the purpose of forming an additional layer around them from the building material they previously swallowed in the form of colored blood corpuscles. As the formation of the layer proceeds, the colored corpuscles contained within the protoplasm are diminishing in size, until nothing is left of them but a few small hæmatin granules, which finally also disappear. The regular arrangement of the hæmatin cells around the walls of these vessels seems to indicate that here the escape of the corpuscles probably takes place by the process of diapedesis.

The above-described mode in which the formation of an additional coat around a newly formed blood-vessel is accomplished in the pseudo-membrane of the dura mater, is very interesting, and, from all I know, appears to have been observed only in this membrane, though it may be presumed that it also takes place in other localities where capillary hemorrhages occur. But, besides this, there is another phenomenon observed, consisting in a number of spindle-shaped cells, which not only adhere to each other by the poles of their spindles, but, moreover, appear connected with certain processes arising from such hæmatin cells as do not lie in the immediate vicinity of blood-vessels, and from which it may be presumed that these cells are also capable of forming the latter themselves (fig. 4).

But, interesting as it may be to behold the wonderful and original ways and means to which Nature resorts to accomplish a certain object, in this case, at least, her efforts appear to be fruitless; for scarcely has she succeeded in strengthening the vessel, when its further development is arrested, and a retrogressive process commences, by which it is transformed into a connective tissue, forming a part of the membrane. It is thus that in the strata of the pseudo-membrane we meet with vessels which, like those above described, exhibit in many places a second layer, or coat, and a number of nuclei still embedded in their walls, but without a single hæmatin cell to be seen along the latter (fig. 5, *a*). That these cells, or compound blood corpuscles, containing the material for the construction of the additional coat, have likewise once existed here, is proved by the presence of the latter around the vessel. But the material which they had accumulated was insufficient for the work to be accomplished, and the laborers, after sacrificing their own substance, left their work unfinished, to be transformed into an inferior structure.

The next step in the retrogressive process of these vessels, therefore, is the disappearance of the nuclei, and the fusion or melting of the walls into a finely fibrillar connective tissue. The different stages of the whole process may be distinctly traced from one vessel through its anastomosing branches to others (fig. 5, *c* and *b*), and the gradual transformation of the vessels be distinguished by the more or less defined outlines, or paler appearance, which they exhibit.

These transformed vessels, however, do not form the only basis of the pseudo-membrane, for throughout their meshes another extremely delicate connective tissue, consisting of very fine, pale, but granular fibrillæ, is observed to extend. The origin of this tissue is quite obscure, though the idea has been advanced that it owed its origin to a secretion of the spindle-shaped nuclei, or emigrated colorless blood corpuscles which it contained. It is true that there are many hæmatin cells, which took no part in the formation of the additional layer around the blood-vessels, or in the original formation of the latter, left distributed throughout the strata of the membrane, which seem to gradually melt away, as indicated by the hæmatin globules appearing now in the form of very small granules, or by the faint outlines and general appearance of their protoplasm (fig. 6). The number of these cells, however, appears too small to account for the quantity of the connective element. I am, therefore, inclined to think, that while they may be instrumental in the process of formation of the latter, an additional amount of formative material is furnished by the blood-vessels in the form of an exudate. This exudate appears at first finely granular, its organization taking place by the minute granules arranging themselves into rows, in order to become finally fused into fibrils, of which the granular, or, at least, finely knotted appearance can be distinctly seen under the microscope. The same mode of development of the fibrillar connective tissue I have observed, a number of years ago in the pia mater of the spinal marrow of very small human embryos, and in other instances afterward. But independent of this mode of formation of the delicate connective element, the latter is also derived from the connective tissue of the transformed blood-vessels above described, the bundles of which, after gradually becoming much thinner and broader, eventually fuse with each other to a certain extent, and assume a more homogeneous appearance. This process, I may safely assert to take place, as I have distinctly observed a connection existing in this manner between the connective tissue representing the substratum of the membrane and the transformed blood-vessels.

Let us now return to the cyst, which, in its formation and development, also offers some points of interest. There were in reality, as already stated, two distinct cysts or cavities forming the hemorrhagic tumor, the origin of which may be traced back to hemorrhages, occurring, not from the vessels of the dura mater, but from those newly formed vessels of the pseudo-membrane, and into or between the strata of the latter. It will be observed (fig. 1) that the upper and smaller cavity is triangular in shape, while the larger and inferior one presents an oval form. From this, it may be presumed that the smaller cavity, which I suppose to have been formed before the other, could not have presented this triangular form directly after the effusion of blood took place into the layers of the membrane, but was, very probably, at first ellipsoidal in its outlines. But, when a second, and more considerable effusion of blood, causing a much larger cavity, subsequently occurred, the partition, or septum, left between the two cavities, was, by the gradual extent in the dimensions of the latter, stretched and pressed upward, rendering thus the upper cavity more triangular. At the same time the superposition of new pseudo-membrane strata, which, before the formation of the cavities, had only proceeded from the direction of the dura mater, now, very probably, chiefly proceeded from the internal surfaces of the cavities, and thus the septum between the latter gradually assumed the shape in which we behold it, though new strata may likewise have been formed upon the outer surface of the inner wall of the tumor.

In connection with the new strata upon the cavernous surface of the pseudo-membrane, it may be asked, how far the fibrin of the effused blood took part in the formation of these layers. The question whether coagulated fibrin is capable of becoming organized into connective tissue has always been an interesting one to me, though I never formed a definite opinion regarding this subject when examining old fibrinous exudates. For this reason I examined very closely the fibrinous framework already described as extending throughout the cavities. The result was that, while the greater part of it exhibited the general character of coagulated fibrin, there were, nevertheless, a considerable number of bundles observed, in which the meshes of the fibrinous network had much increased in size, and its fibrillæ assumed the appearance of crossing each other, like those of connective tissue. In other parts of the framework, especially in those adjacent to the wall of the cavity, bundles of fine, straight fibrillæ, running parallel to each other, were even observed. In the sections of the walls of the cavities it was observed that in many places the fibrin passed gradually into the innermost layer of the walls without any distinct, defined border. This observation has inclined me to the view that, under certain conditions, coagulated fibrin, when in close and intimate contact with living structure, may be transformed into connective tissue; or, as in the case before us, furnish, at least, the material for the formation of such tissue under the influence of the wandering cells. In the fibrinous framework itself numerous colored blood corpuscles and a few colorless ones, but no hæmatin cells, were observed.

Before closing the discussion of the hemorrhagic cyst of the dura mater, it remains to be mentioned that in the sections a number of hæmatin cells were observed between the dura mater and the first layer of the pseudo-membrane, from which fact the deduction may be made that, while the first neoplastic stratum represents an exudate from the inflamed vessels of the dura mater, capillary hemorrhages do, at the same time, occur between the two membranes, giving rise to the formation and development of hæmatin cells, through the activity of which the new blood-vessels and other elements of the pseudo-membrane are called into existence.

As regards the cavity in the left hemisphere of the cerebrum, it has already been mentioned that the destructive process had been limited to the white substance, the gray matter of the cortex cerebri, with the exception of that portion lost by the formation of the orifice, being left in the form of a shell. The microscopical examination of a thin section of the entire walls of the cavity showed that the destruction had been exactly limited to the fibres of the corona radiata, but that the entire cortex, and the commissural fibres connecting the neighboring convolutions, had been left. But, while in the anatomical elements of the cortex, with the exception of vacuoles around the ganglion-cells, no pathological changes were observed, the commissural nerve fibres had undergone a degenerative process. This process appeared to consist in an atrophy, or gradual wasting of the medullary sheath and also the axis cylinder, a breaking up into small granules or anatomical molecules. In some places the nerve fibres had entirely disappeared, and nothing was left but the naked neuroglia, of which here I was able to thoroughly convince myself that it does not represent a continuous network, but consists, as I have elsewhere stated, of fine and straight fibrillæ crossing each other obliquely. In other places the nerve fibres were still represented by mere shadows without definite outlines, though colored by carmine, a phenomenon which may be explained in presuming that, while the medullary sheath and the axis cylinder had undergone this granular degeneration, the tubular sheath of Schwann was left to absorb the carmine. In some places, however, a few varicose fibres with double contour, or single axis cylinders, were also observed. The numerous nuclei, lodged between the fibres, were all left, and colored by hæmatoxylin. In some parts of the walls of the cavity extravasated colored blood corpuscles and hæmatin globules were met with, but no trace of organization could be discovered. As already stated, the internal surface of the cavity presented, microscopically, a perfectly smooth appearance, resembling a living pseudo-membrane. Upon a section of the walls, also, the portion bordering the cavity presented a densér appearance, as if some organization had here been attempted. But, when examined microscopically, it was found that, though the structure of this border appeared denser than the rest of the wall, the appearance depended on no special organization, but was merely caused by an additional number of round and also spindle-shaped nuclei, which, nevertheless, might indicate that a fuller attempt had been made by nature to limit the progress of the disease.

The chief interest, which the above-described case of destructive lesions of the cerebrum offers, consists in the extent of the lesions and the length of time during which they existed without much disturbing the general health, or even the mental faculties of the patient. Some other interesting points, relating to the physiological psychology of the case might, besides, be discussed, if the extent of our knowledge of the true mechanism of the cerebrum and its cortex was not so limited. I shall, therefore, postpone this part of the subject until the time will have arrived when I may turn to this case for the purpose of illustrating some special views.

Explanation of the Illustrations.

Fig. 1.—Represents the anterior view of a section of the calvarium, with dura mater and pseudo-membrane. Upon the inner surface of the right half of the dura mater, the hemorrhagic cyst with its two cavities, and the fibrinous network extending through the latter, is seen ; on the left side, the orifice in the calvarium, filled up by the fibrous structure arising from the dura mater, is observed ; *a*, calvarium ; *b*, dura mater ; *c*, pseudo-membrane ; *d*, fibrous membrane, filling up the artificial foramen in the bone (natural size).

Fig. 2.—Represents a small blood-vessel of the pseudo-membrane, showing the additional layer, formed by the hæmatin cells around its walls (375 diameters).

Fig. 3.—Represents a blood-vessel of the same kind, but of a larger diameter, and with larger hæmatin globules lying along its walls (375 diameters).

Fig. 4.—Free hæmatin cells, distributed throughout the meshes of the vascular network of the pseudo-membrane. Some of them are sending out processes, which, as it appears, form a connection with certain long spindle-shaped cells, resulting, probably, in the development of blood-vessels (375 diameters).

Fig. 5.—Represents the network of retrograding blood-vessels of the pseudo-membrane ; *a*, blood-vessels during the first stage of the retrogressive process, still exhibiting the additional neoplastic coat, and also a number of nuclei ; *b*, blood-vessels already transformed into connective tissue, the nuclei have disappeared ; *c*, vessel, showing the connection with the latter, and the gradual transformation ; *d*, delicate connective tissue of the substratum of the membrane (375 diameters).

Fig. 6.—Minute hæmatin granules, representing the remains of hæmatin globules in the substratum of the membrane (375 diameters).